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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,462	09/28/2001	Yasuo Yamaguchi	214400US2	1740

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EXAMINER

CRUZ, LOURDES C

ART UNIT PAPER NUMBER

2827

DATE MAILED: 06/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,462

Applicant(s)

YAMAGUCHI, YASUO

Examiner

Lourdes C. Cruz

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Reference number 4, Fig. 2. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: See page 25, line 14 of the disclosure, wherein "formed 1 in place..." is grammatically incorrect, making that paragraph of the disclosure confusing to the examiner.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 have been rendered indefinite because it is not clear to the examiner how the heat generating layer is embedded in the same insulating layer on which the

wiring layers are formed with a part of that same insulating layer **interposed** **“therebetween”**. See that 6 and 4 are shown as two separate insulators.

Also, the claim recites phrases such as “of which lower end”, “which upper end” “and upper end”. What are these terms referring to? Note that avoidance of “the” in order to prevent Lack of antecedent basis rejections not only makes the claims grammatically incorrect, but also extremely confusing. Additionally, referring to the same quoted phrases above, and to the following see that “said other end” and “the other end” of said heat generating structure” has rendered the claim indefinite since not only “the other end” lacks antecedent basis, but also the constant use of “end” when so frequently lacking antecedent basis has rendered the claim very unclear.

See that other claims 1 recite the above indefinite terms (for example, claims 10 and 11).

For the reasons stated above the claims have only been examined as best understood by the examiner.

Claim 11 recites “”said first plug and lower end...”. It is unclear to the examiner if the upper end is connected to the first wiring layer or first plug, or if in the alternative the end is connected to said first wiring layer **or** said first plug **reaches said principal plane**.

Claim 15 recites “of which width”. Which width?

Claim 17 recites “which upper”, “lower end”. Which end is the Applicant intending to further structurally define? Also see rejection to claim 1 above. The same rejection Applies to **claim 18**.

See that the claims have a multiplicity of indefiniteness problems. Therefore, the claims have been examined only as best understood by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 and 9-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Honjo (US 4779127).

Honjo discloses a semiconductor comprising:

A substrate 32 having a principal plane 33; an insulation layer 14 formed on the principal plane; a heat generating layer 34 embedded in the insulation layer and opposing to the principal plane with a part of said insulation layer interposed therebetween; a first wiring layer 40 disposed on said insulator layer; a first plug 44 embedded in the insulator layer, of which the lower end is connected to one end of heat generating layer 34 and the upper end is connected to said first wiring layer 40, having a cross-sectional shape along the principal plane of a rectangle with short sides are parallel to a main direction connecting ends of said heat generating layer and long sides are parallel to a direction perpendicular to said main direction;

A second plug 43 embedded in said insulator layer, of which lower end is connected to the heat generating layer and the upper end is connected to the second

wiring layer 39; and a third plug 45 embedded in said insulator, and connected to said first plug and said principal plane.

Honjo also discloses a device wherein:

- Wherein said upper end of the third plug is connected to the first plug (through the wiring layer 40)
- See that the layers are P or N type (claims 3)
- Said insulator has a low dielectric constant
- First wiring layer transmits stable potential, has an elongated width as to be larger or equal to a width based on a design rule.
- The plugs are divided into a plurality of connected unit plugs that fill the via hole made through insulator 35
- A fourth plug 37 connected to said second wiring layer 39 through 36 and the lower end reaches the principal plane
- The third plug forming a Schottky barrier, in as much as Schottky barrier has been defined by Applicant

Claim Rejections - 35 USC § 103

Claims 6, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo.

See that Honjo discloses all the structural limitations above. However, Honjo is silent about the length of the sides and/or their fulfilling the claimed equation. See that such dimensions do not cause any critical or unexpected results to the device's

operation. Rather it is merely an obvious design choice determined by routine experimentation. In *Aller*, the court stated "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456 105 USPQ 233,235 (CCPA 1995). Therefore, it would have been obvious to alter, modify the dimension of the claimed sides for the purpose of making a more compact device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lourdes C. Cruz whose telephone number is 703-306-5691. The examiner can normally be reached on M-F 10:00- 6:30.

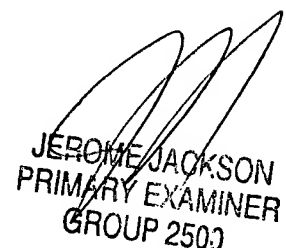
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lourdes C. Cruz
Examiner
Art Unit 2827



Lourdes Cruz
June 19, 2002



JEROME JACKSON
PRIMARY EXAMINER
GROUP 2503